**IT Applications, Unit 4**

**Ch 6, Developing a solution using spreadsheet software, p 192-213**

Case Study: Point Pleasant Social Service Program – organisational outline and current practice

**Designing spreadsheet solutions and output**

1. Describe what is involved in the solution design stage.

Planning how the solution will function using a variety of design tools, the appearance of the resulting information and the creation of evaluation criteria.

**Spreadsheet Design Tools**

Elaborate under each of the following design tools:

1. IPO chart

Input process output charts identify the input requirements of the solution, the processes involved to manipulate data and the output of the solution

1. Flow chart, (list what each of the symbols mean from fig. 5-10.

Graphically represents in a logical order the steps required to create the solution

Decision

Process

Start/end

1. Formula list

A data dictionary of all the formulas to be used in the solution, but written in simple English

1. Structure chart

Graphic representation of how the solution might work. Shows relationships between sheets in a workbook, giving the designer an idea of how large the workbook is and how the sheets will be used.

1. Layout diagrams

Shows the basic layout of each type of work sheet in the solution, indicating type of data, contents of cells, labels, validation rules and formats/conventions

**Formats and conventions, p 202-**

1. list under each of the following subheadings the major formats and conventions that apply to spreadsheets:
   1. numerical information

* right aligned in columns
* money values have two decimal places
* percentages appear at the top of the column instead of being used with each individual value
* subtotals have a single line above
* grand totals are in bold with double lines below
* symbols indicating unit of measurement appear beside column heading
  1. financial reports
* use a space ore comma to separate numbers greater than 999
* italics to indicate addition or subtraction
* subtotals have a single line above
* right align dates to allow for double figures
  1. charts and graphs
* have titles identifying name of organisation and purpose of the chart
* label x and y axis
* show unit of measurement on axis
* label segments of pie charts
* briefly explain the purpose of the spread sheet identifying the author
* label input requirement of cells
* list all equations used in a separate document

1. Describe the file naming conventions for spreadsheets.

They should indicate its purpose and time period it covers, each work sheet having a purposeful and meaningful name as well.

**Designing a macro**

1. What is a macro?

A macro is an automated series of tasks that can be run simply by using a button, etc. in the user interface.

**Validation**

1. Describe each of the following types of validation used in a spreadsheet:
   1. Range checking

Ensuring that the data falls within the specified ‘range’, if the data does not fall into the range an error message will appear.

* 1. Existence checking

When the spread sheet uses product codes, a LOOKUP formula can be used to check the existence of a code in another worksheet table. If the code does not exist, other formulae that would calculate totals reliant on that code will not calculate until a correct code is inserted.

* 1. Conditional formatting

Conditional formatting is a way of alerting the user to an error, working in combination with ‘Data Validation’ to create pop-up error alerts.

* 1. Data type checking

Ensures that the data entered is of a particular type, e.g. a valid date is entered. Alignment of cells also provides a means of checking for correct data type.

* 1. Restricted data entry

Restricting the number of available options, by using a drop down menu of selections, minimises the users chance of entering incorrect data

* 1. Validation alerts

These alerts make the user aware when they have entered incorrect data and incurred an error by means of not meeting the validation requirements.

**Planning to test a spreadsheet solution**

1. What is the difference between validation and testing?

Validation is involved in input while testing is concerned with output and the solution itself. Testing also ensures electronic validation is working correctly.

1. When is the test plan or test table created?

The test plan is created in the design stage so that the testing can be conducted after the development stage.

1. Attributes or properties to a spreadsheet solution that need to be tested; elaborate under each of the following testing types:
   1. Functionality testing

Relates to the activities or actions that it was designed to carry out. When testing functionality, it must be determined that the solution meets the organisation’s requirements. The formulae must also be tested, by using specific types of data to test the upper and lower boundaries for functionality.

* 1. Presentation testing

Relates to how the solution is communicated to the user – as a report, chart, list of results etc. The intended audience must be kept in mind when designing the solution and the solution must overall contain appropriate format conventions to look and work effectively (appropriate headings, consistent text size, use of colour scheme etc.).

* 1. Usability testing

The user friendliness of the solution – how well the information is conveyed and how accessible it is to the users. This can include the navigation throughout the worksheet, as well as macros and hyperlinks.

* 1. Accessibility testing

A spread sheet needs to be easily accessible – does the solution open at the right worksheet? Are the fonts easy to read? Use of colours for colour blind users, etc.

* 1. Communication of message

How clear and obvious the important information in the solution is presented, for example a poster for a party must indicate venue, time and place. Keeping the information simple is a good way of keeping the user from getting confused.

**Evaluating the solution and output**

1. What does evaluation consider?

Evaluation considers the effectiveness and efficiency of the solution. It is usually done after the solution has been implemented for some time.

1. What information needs to be gathered?

Information from a variety of users, and is similar to fact finding in the analysis stage. It must be determined if the solution is meeting its requirements.

1. Who is best to undertake the evaluation?

It should be evaluated by someone other than the developer so it will be viewed impartially.

1. When is the evaluation criteria developed?

Evaluation criteria are developed in the design stage so the designers know which features to include.